

ABSTRACT

The apparatus of the invention consists of two module, one of which carries an sample plate handling device, which is docked to the mass spectrometer in a working position for loading ionized samples from the atmospheric pressure environment to the vacuum chamber of the mass spectrometer, while the other one is used for picking up the sample plate carrier with preliminarily prepared and inserted sample plates into and from the storage cassette and for transferring the sample plates carriers to a stand-by position. The sample plate handling device is moveable between the aforementioned working position and the stand-by position and is provided with means for taking the stand-by sample plate from the carrier and for holding it during delivery of the ionized samples to the mass spectrometry, as well as with means for shifting the sample plate inside the sample plate handling device in the X-Y coordinate system for arranging a selected sample cell coaxially with the center of the ion-sampling orifice. The first module provides movements in the Z-axis and X-axis directions, and the second module provides movements in the Z-axis and Y-axis direction. As the mechanisms of the aforementioned modules operate under atmospheric pressure, they do not need the use of any special and expensive sealing devices required for use of similar mechanisms in vacuum. The system is fully automated and movements of all mechanisms and drives are controlled by a data preliminarily inputted to a central processing unit provided in the control system of the apparatus. The apparatuses of the second and third embodiments have only one module in conjunction with the combined target flange that also functions as a mechanical arm of a robot.